REMARKS

Reconsideration and allowance of the present application are respectfully requested. Claims 1 and 10 had previously been canceled, following an indication in the previous Office Action that claims 9 and 20 contained allowable subject matter. However, because the Examiner has now withdrawn the indication of the allowable subject matter, efforts to expedite allowance have been rendered moot. It is respectfully submitted that claims 1 and 10 in their original form are allowable over the documents relied upon by the Examiner. Accordingly, original claims 1 and 10 have been reinstated as new independent claims 21 and 22, and claims 9 and 20 have been returned to dependent form. New claims 23-24 have been added to recite features previously recited in claims 8 and 19. Claims 2-9 and 11-20 remain pending in the application along with newly added claims 2 1-24.

In numbered paragraph 4 of the Office Action, the Examiner has indicated that previous arguments have been deemed moot in light of the new grounds of rejection raised in the Office Action. The new grounds of rejection is set forth in numbered paragraph 7, wherein claims 2-9 and 11-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,960,214 (Sharpe, Jr.). As previously mentioned, independent claims 9 and 20 have been rewritten into dependent form, and new independent claims 21-22 have been submitted. Claims 21-22 are allowable over the Sharpe patent.

The present invention is generally directed to a method and system for integration of a field device in an installation control system. Exemplary embodiments include a

substation or switch gear assembly controlled by a distributed installation control system from field devices connected to one another via a number of communications buses. An exemplary method or control system is adapted for **integration** of a new field device into the control system. That is, exemplary embodiments are directed to the adding a field device to the control system by connecting it to a communications network represented by the communication buses, such as the communications buses 3 and 5 of Applicants' Figure 1.

As described on Applicant's specification page 8 beginning with line 17, a control station, such as control station 2 of the Figure 2 installation control system, includes an engineering application 21 for integration of field devices 1 and for commissioning of the installation. However, as described on Applicants' specification page 17 beginning with line *15,* during operation of the installation, following the integration, the engineering application is no longer required.

In accordance with exemplary embodiments, the integration of a field device in a control system is performed by a process which includes transmitting, from the field device to the control station, a functional description of the field device in a standardized form. Applicants specification pages 9-10 provide an exemplary functional description as a "Substation Configuration Language (SCL)". The content of the functional description, including addresses, type of device functions, and so forth, enables the installing of functions associated with the field device on the control station, and the configuring of communications links between the field device functions and the control station functions. Transmission of the functional description can be performed without a communication link

having been set up before hand, but rather can be based on a registry service as described, for example, on Applicants' specification page 8, beginning with line 34.

Following transmission of the functional description from the field device, functions associated with the field device can be installed on the control station. This installing function can be performed by the engineering application, which instantiates (that is, creates and assigns) associated functions, such as graphical representations, at the control station. The installing function is described, for example, at specification age 12, beginning with line 31.

Communication links are configured between the device functions and the control station functions. The communication links can include logical (e.g., addresses) and physical (e.g., parameter format) information about the data exchange as discussed on specification page 2 beginning with line 6. The physical information or communication parameters are related to the standardized functional description transmitted by the field device. This enables the data exchange not only with the field devices, but with their device functions or services.

Exemplary embodiments for integrating a new field device in an installation control system provides significant advantages. For example, detailed logic links and communication parameters need not be specified in a planning phase preceding realization of an installation, such as a switch gear assembly to be controlled by the field devices. In addition, installed functions of the control station and configured communication links between control station functions and field device functions can be associated to individual elements or primary units of the installation either manually or without manual

intervention. Manual association can be performed by an operator as described at specification page *5,* paragraph 3. Alternately, the association can be performed without manually intervening operators in a manner as described at specification page *5,* paragraph 3. In this latter case, the control station knows about the element to be associated to a particular field device, and the field device in turn identifies itself upon integration with a pre-registered identification number.

The foregoing features and advantages are broadly encompassed by Applicants' independent claims 21 and 22. For example, claim 21 is directed to a method for integration of a field device in an installation control system, wherein the installation control system has a communications network and a control section. The claim 21 method comprises transmitting, by the field device, a functional description of its device functions to the control station in a standardized form. The claim 21 method also recites installing functions associated with the field device on the control station; and configuring communications links between the device functions and functions of the control station. Such a combination of features is neither taught nor suggested by the Sharpe patent.

The Sharpe patent is directed to a field device management system and includes an interface which provides communication between a software application implemented on the system and a set of smart devices coupled to the system. However, the system of the Sharpe patent is merely directed to an organization of dataflow, and is not directed to the setup operation by which devices can be integrated into an installation system. As such, the Sharpe patent provides no teaching or suggestion for transmitting a functional description of field device functions to a control station **upon integration** of the field

device into an installation control system. In addition, the Sharpe patent provides no teaching or suggestion for **configuring** communication links between device functions of a field device to be integrated into an installation control system and functions of a control station.

The Sharpe system discloses a management system 10 in Figure 1, which is connected with a process 12 that includes smart field devices 16, 18, 20 and 22. Figure 2 illustrates the management system in greater detail as including a device server 68, a smart device communication interface 74 and a Device Description Server (DDS) 72 for interfacing with each smart device, such as smart device 12 in Figure 2. Referring to the Abstract of the Sharpe patent, the interface is described as providing communication for accessing information from and/or writing information to a smart field device, such as the smart field device 12. An object of the Sharpe patent is to avoid new programming when a new smart device is added, as discussed at column *5,* line 2. However, the Sharpe patent provides no teaching or suggestion as to procedures to be implemented upon addition of a field device to an existing management system. Rather, the Sharpe patent is directed to the organization of dataflow in an existing management system, and is not directed to setting up the system.

In operation, the Sharpe system retrieves data from one of the on-line devices, such as smart device 12, in a manner as described at column 11, beginning with line 7. A command is sent to the smart device communication interface 74 of Figure 2, which sends a request to the DDS 72 for information on how to retrieve data and/or how to interpret the data. In response, "instruction information" for the data retrieval operation is obtained

from the device description server and returned to the communication interface 74. The interface 74 uses this information to address the smart device 12. The smart device then responds with data streaming that includes the requested data.

The instruction information obtained from the device description server (DDS) 72 by the interface 74 appears to constitute logical and physical information behind the communication links, and it allows the server 68, via the communication interface 74, to access data from the smart device 12. Column 3, beginning with line 15 describes the DDS as a library of routines which can interpret the device description of a smart device to provide information pertaining to the smart device such as: set up and configuration of the smart device; communication with the smart device; user interfaces; and methods for using conjunction with the smart device. However, the Sharpe patent does not teach or suggest the manner by which the "instruction information" is supplied to the device description server. That is, there is no teaching or suggestion in the Sharpe patent for **configuring** communications links between device functions associated with the smart device, and functions of a control station. The Office Action does not address these shortcomings of the system disclosed in the Sharpe patent.

More particularly, the Examiner appears to correlate the claim feature of "configuring communications links" with the communication line 42 of Figure 1 in the Sharpe patent. However, the communication line 42 in the Shape patent is a physical line that connects the smart devices to a modem (see, for example, column 6, line 42 of the Sharpe patent). However, the mere indication of a physical communication line does not constitute a configuring of a communication link between device functions and functions of

a control station, which is substantially more involved than merely providing the indication of the existence of a physical communication line.

In addition, the Sharpe patent does not teach or suggest the transmitting, by a field device, a functional description of its device functions to a control station. The Examiner appears to refer to "device related information" as representing the functional description recited in claim 1 (see, for example, the last paragraph on page 3 of the Office Action). However, the information referred to by the Examiner can, according to the Sharpe patent, be provided either by the smart devices, or as described in column 6 beginning with line 27, can be stored in a database. Hence, the device related information cannot be considered to correspond to the functional description information which is necessarily transmitted by a field device upon integration of the field device into an installation.

Thus, the Sharpe patent fails to teach or suggest Applican's method as recited in claim 21. Applicants claim 22 is directed to an installation control system which contains structural elements for performing functions similar to those described with respect to the claim 21 method. Thus, for reasons similar to those discussed above with respect to claim 21, claim 22 is also allowable over the Sharpe patent.

All of the remaining claims depend from claims 21 and 22, and recite additional advantageous features which are neither taught nor suggested by the Sharpe patent. For example, claim 2 recites that the control station contains information about a structure of an installation. Such a structure corresponds to a physical arrangement of elements or primary units of an installation, such as the circuit breakers of a switch gear assembly. In contrast, the "hierarchy" referred to by the Examiner in rejecting claim 2 is purely a

software construct for identifying and categorizing types of information and data (see the abstract and column *5,* line *5* of the Sharpe patent). The use of a class hierarchy in association with the object oriented framework of the Sharpe patent, fails to teach or suggest the features of Applicants' claim 2 method. Claim 14 recites similar features and is similarly allowable over the Sharpe patent.

All rejections and objections raised in the Office Action having been addressed, it is respectfully submitted that all of the pending claims are in condition for allowance. However, should there be any remaining questions, it is respectfully requested that the undersigned be contacted at the number shown below.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

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By: _____
Patrick C. Keane
Registration No. 32,858

P.O. Box 1404
Alexandria, Virginia 22313-1404

(703) 836-6620